ingegneria sismica
International Journal of Earthquake Engineering
Anno XLIII - Num. 2 - 2026

Research on the influence mechanism of professional vocal training on singers' artistic expressiveness

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SUMMARY: *This paper is oriented to the talent cultivation needs of singing art majors, observes the application effect of professional vocal training programs, and explores the path and influence mechanism of its effect on singers' artistic expression. The experimental samples are selected and experimental and control classes are set. In the experimental class, melodic dictation and sight-singing are the main training contents, and the selection of teaching materials, training methods and practice methods are based on the training objectives. Under this professional vocal training mode, the students in the experimental class were able to actively use the professional vocal techniques of vibrato, straight voice and jittery voice, and they also had a high level of singing breath and vocalization (>50.00%) and vocal discrimination (>83.33%), and 73.33% of the students showed a high level of singing self-confidence and singing preference. The experimental results show that professional vocal training is not only limited to the improvement of singing skills and abilities, but also creates a good learning atmosphere, enhances the motivation and interest of the singers, and improves the artistic expression of the singers through the combination of external performance and internal perception.*

KEYWORDS: *professional vocal training; artistic expression; influence mechanism; dictation and sight-singing*

1 Introduction

Artistic expressiveness in vocal singing relies on the emotion, style and flavor presented in the singing by the singer with his personal knowledge of vocal theory, vocal singing skills, stage practice experience, etc., on the basis of a comprehensive analysis and experience of the work, and can gain the audience's affirmation and empathy, leaving a deep impression on the audience [1, 2]. Voice and emotion, voice and stage, voice and body, emotion and body, etc. are all important elements of the combination of vocal art expressiveness, the lack of emotional vocal technique is difficult to produce strong emotional resonance, reducing the quality of the work [3-5]. It can be seen that the artistic expression in vocal singing has a decisive impact on the quality of singing. And vocal training is an important method to improve students' artistic expression in teaching.

Professional vocal training is the key process of shaping excellent singers, which can not only improve the technical level of singers, but also enhance their musical expression and artistic infectivity. Through systematic vocal training, singers can master the correct method of vocalization, enhance breath control, expand the range, improve pitch, and learn to use a

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https://doi.org/10.65102/is2026517 Published: 30 April, 2026

variety of vocal techniques to enrich the tone and expression [6-9]. Vocal training also helps to prevent vocal fold damage, protect voice health, and prolong professional life [10, 11]. It also enhances singers' musical comprehension and stage presence, enabling them to better interpret different styles of works [12, 13]. Therefore, whether it is a professional singer or an amateur, continuous vocal training is a necessary way to improve the level of singing and achieve artistic growth. However, the facilitating role of professional vocal training in vocal artistic expression has been widely recognized, but the mechanism of influence has not been deeply investigated, which is an important deficiency in the theoretical curriculum of vocal education.

Based on the idea of controlling variables, this paper selects experimental samples and divides them into experimental subjects and control subjects, focusing on three aspects, namely, teaching materials, teaching methods and practice modes, to propose a vocal training program for the experimental subjects. Comparative analysis of students' pitch, rhythm, treble and bass performance under different training programs demonstrates the feasibility of this paper's vocal training program. In addition, we examined the use of vocal vibrato skills of the experimental samples, and designed questionnaires from the mastery of singing skills, theoretical knowledge and singing attitudes, to explore the influence of professional vocal training programs on the learners' artistic expression by analyzing the response characteristics of the experimental samples.

2 Study design and preparation

Using an experimental design, 60 undergraduate music performance majors with basic vocal skills were recruited as experimental subjects and randomly divided into experimental and control classes in groups of 30. The experimental class used a professional vocal training program, which is designed in detail below, while the control class followed the traditional vocal training program. During the experimental process, participants performed vocal singing tasks and made resonance adjustments as required. Participants' singing data were collected by means of audio recording and vocal spectral analysis, and their effects on vocal singing performance were assessed through the collection and analysis of experimental data.

2.1 Experimental preparation

Arrange appropriate warm-up activities for each experimental participant to ensure that the voice and body are in good condition, and, set up recording equipment, resonance region detection instruments, etc. in the laboratory or recording studio.

2.2 Implementation process

Recording equipment was used to document the singing process of each participant's experimentally guided vocal tuning skills and training, while the resonance effects of the participants were monitored and recorded in real time using a resonance region detection instrument.

2.3 Vocal training program for experimental classes

(1) Melodic Dictation Training

Melodic dictation training is divided into monophonic melodic dictation and polyphonic melodic dictation according to the difficulty, and the preparation, selection and training methods of different melodic dictation training are different due to the slight difference in

content and purpose.

Preparatory exercises for monophonic melodic dictation are based on melodic intervals and rhythmic training in the key. The selection of teaching materials for training should be aimed at cultivating and consolidating basic skills and expanding abilities. Through the strong singing, structural square, tonal stability of the parallel or contrasting double phrase material focus on building students' sense of key, based on the use of instrumental music, and the main body of the aesthetic difference between the melodic works, students to expand the ability to practice. In the training process, memorization is taken as the key training method, and dictation, filling in the blanks and correcting errors are the main dictation methods, combining the students' level and ability, and choosing the most suitable training methods according to different training purposes.

The preparatory exercises for polyphonic melodic dictation are the same as those for monophonic melodic dictation, focusing on harmonic range training within the tonality. In the initial stage, the materials should be mainly harmonic materials for the training of tonality and sense of harmony, and then expand the students' dictation ability through some slightly more difficult two-voice dictation materials.

(2) Sight-singing training

Sight-singing training is also divided into monophonic sight-singing and polyphonic sight-singing, and there is no clear type of material selection for both. Among them, the material for monophonic sight-singing should be combined with the teaching objectives and training needs, and the style tends to be diversified. The practice of instrumental works with singing melody can be emphasized to help students expand their professional knowledge and master various musical characteristics. Training within three ascending and three descending key signatures is the main focus, and the training method is based on reading the score and singing the lyrics, shifting the key training and recitation. Polyphonic sight-singing material can be programmed to maximize the choice of styles, and the training method is based on imitation and three-dimensional rhythmic training.

3 Analysis of the results of the vocal music teaching experiment

3.1 Comparison of teaching effectiveness of different training programs

After the experiment, the degree of improvement in the four basic aspects - pitch accuracy, rhythm, high pitch, and low pitch - of the experimental subjects before and after the experiment was statistically analyzed. The degree of improvement was classified from low to high into three levels: no improvement, improvement by one level, and improvement by two levels. "No improvement" indicates that the scores before and after the experiment were at the same level. "Improvement by one level" means that the score after the experiment was one level higher than that before. "Improvement by two levels" means that the score after the experiment was two levels higher than that before. The degree of improvement in a certain aspect of each training scheme was evaluated and analyzed based on the proportion of people who improved by one or two levels in that aspect.

3.1.1 Effectiveness of different training programs on intonation

The improvement levels of students' pitch accuracy under the two training schemes before and after the experiment are shown in Figure 1. In the experimental class under the teaching scheme proposed in this paper, only 3.33% of the students were in the "no improvement" category, 60.00% of the students achieved one level of improvement, and 36.67% of the

students reached the "improved by two levels" category. In contrast, for the traditional training scheme, the improvement effect of students was mainly concentrated in the "no improvement" category, with 60.00% of the students achieving improvement, and only 10.00% of the students reached the "improved by two levels" category. This indicates that the teaching design proposed in this paper can effectively assist in improving students' pitch accuracy levels.

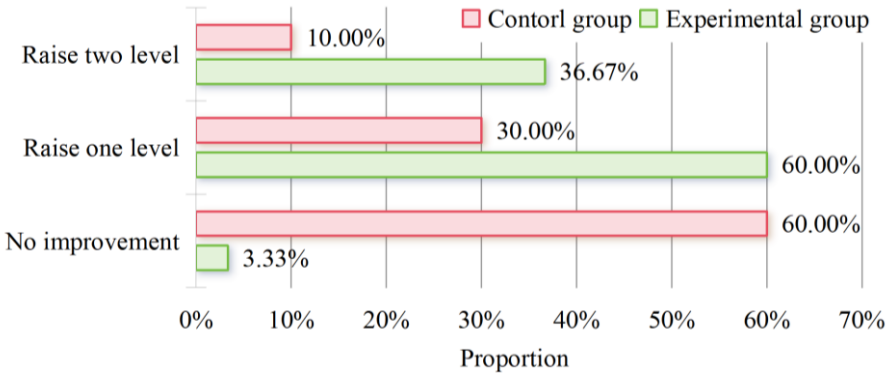


Figure 1: The degree of pitch improvement under different teaching modes

3.1.2 Analysis of the effects of different training programs on tempo

The improvement of students' music rhythm before and after the experiment under the two training programs is shown in Fig. 2, and the proportion of experimental students in the three grades is 0.00%, 63.33% and 36.67%, indicating that the students' music rhythm level has been improved to different degrees after the experiment of the teaching method in this paper. The percentage of students in the control class in the three grades is 53.33%, 40.00% and 6.67%, mainly in the “no improvement” grade.

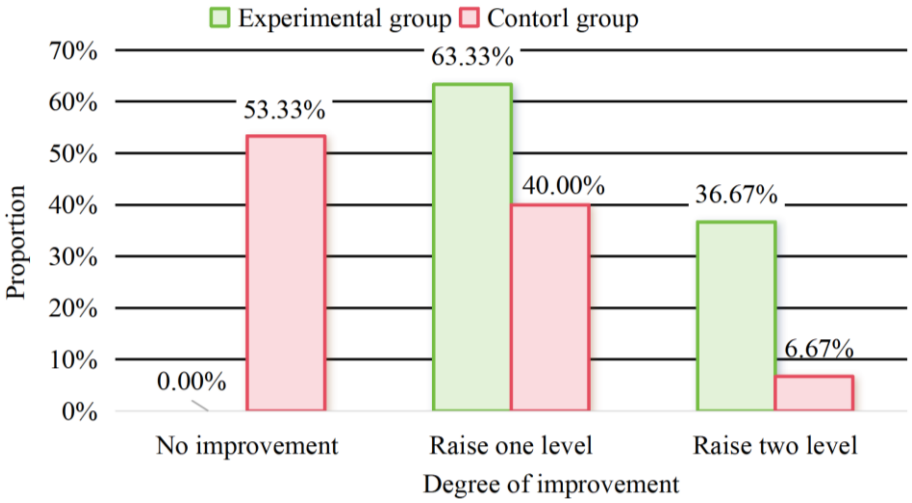


Figure 2: The degree of rhythm improvement under different teaching modes

3.1.3 Analysis of the impact of different training programs on the treble

The improvement of the students' soprano voice before and after the experiment under the two training programs is shown in Figure 3. 73.33% of the students in the experimental class reached the “one notch higher” level, 26.67% reached the “two notches higher” level, and the overall improvement effect was excellent. The overall improvement effect is excellent. In contrast, in the control class, 40.00% of the students stayed put and showed no improvement,

50.00% of the students improved by one grade, and only 10.00% of the students improved by two grades.

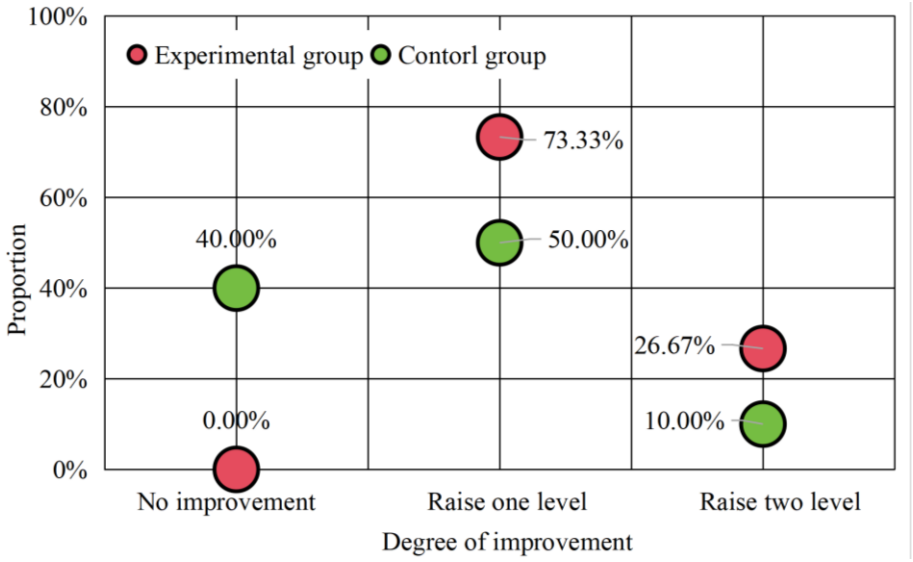


Figure 3: The degree of high pitch improvement under different teaching modes

3.1.4 Effectiveness of different training programs on the bass sound

The bass performance of the students before and after the experiment under the two training programs is shown in Fig. 4. Since bass skills are relatively more dependent on one's own ability and talent, the majority of the students in the experimental class (76.67%) only improved by one notch, 6.66% of the students did not improve, and only 16.67% of the students improved by two notches. The bass performance of the students in the control class also improved poorly, with 43.34% of the students not improving, 53.33% improving by one notch, and 3.33% improving by one notch.

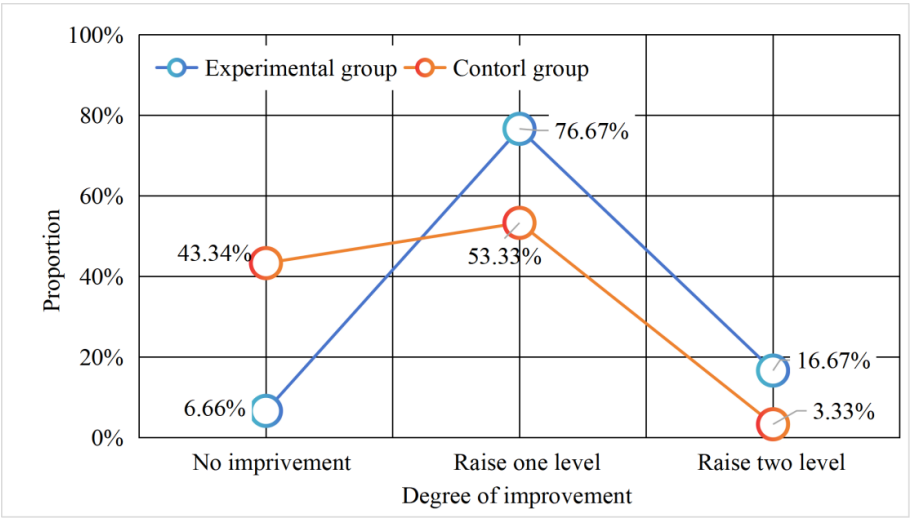


Figure 4: The degree of bass enhancement under different teaching modes

3.2 Students' vocal vibrato performance

The percentage of students who used vibrato, straight and jittery articulation techniques in the final exams of the experimental and control classes is shown in Fig. 5. From the perspective

of the classes, the experimental students were more skillful in the use of multiple articulation techniques, with the number of students using these techniques in the order of 80.00%, 70.00%, and 43.33%, whereas the students in the control class did not have more than 60.00% of their articulation techniques. This reflects that the experimental class students are significantly better than the control class students in terms of both music literacy and singing skills under the training program. From the perspective of articulation techniques, both experimental and control students preferred the use of vibrato and straight tone techniques, with the percentage of the number of users being 50.00% or more, which is due to the relatively niche nature of the music viewing of Jitterbug, in addition to the articulation needs of the subject matter of the singing work.

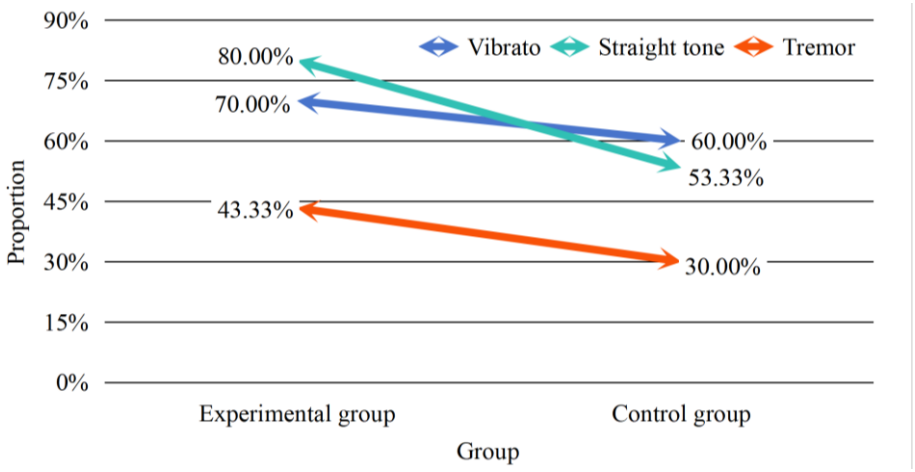


Figure 5: The application of vocal techniques

3.3 Analysis of learner self-evaluation

In order to understand the students' singing performance ability, as well as the subjective awareness of the degree of mastery of singing techniques after the teaching experiment practice. The questionnaires were designed from three perspectives, namely, singing breath and vocalization, whether they could identify the correct and incorrect singing vocalization, and singing confidence and hobby, and the responses of the experimental class and the control class on each question were counted to further analyze the effect of the teaching experiment mode in this paper.

3.3.1 Singing breath and vocalization level

The Singing Breath and Vocalization section of the questionnaire contains 3 questions and options as follows:

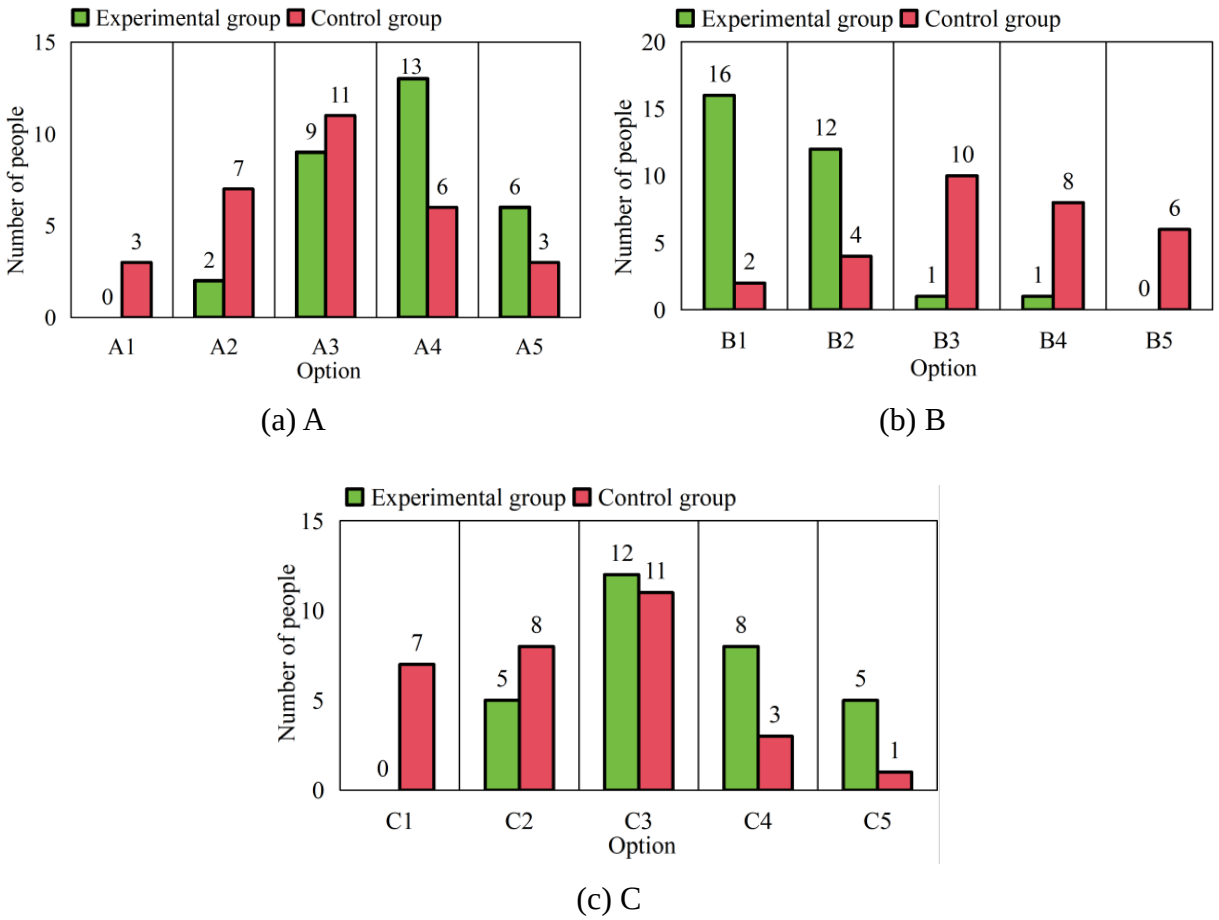
(A) Have you mastered the knowledge and practical application of force in singing? (A1) No mastery, (A2) Preliminary mastery, (A3) General mastery, (A4) Good mastery, (A5) Complete mastery

(B) How difficult do you think it is to understand the human vocal organs during singing? (B1) easy, (B2) relatively easy, (B3) normal, (B4) somewhat difficult, (B5) very difficult

(C) Do you have a good grasp of the mechanics of human vocalization and can combine the two well? (C1) No mastery, (C2) Preliminary mastery, (C3) Fair mastery, (C4) Good mastery, (C5) Complete mastery

The responses of the students in the experimental and control classes on the singing breath and vocalization part of the questionnaire were plotted in Figures 6(a)-(c). Students under different training programs showed significant differences in the choice of questions, with a

total of 19 students in the experimental class having a good mastery of the knowledge and practical application of force in singing, 28 students in the experimental class considering the difficulty of the human vocal organs to be relatively simple, and 13 students in the experimental class being able to better incorporate the mechanics of the human body's vocalization. In contrast, both in terms of mastery and difficulty perception, the control class students were more inclined to general mastery and below or more difficult.



(a) A

(b) B

(c) C

Figure 6: Investigation of singing breath control and vocalization

3.3.2 Recognition of Singing Vocalizations

In the module on whether or not you can recognize correct and incorrect singing vocalizations, five questions are set as follows:

(D1) The larynx and vocal cords are the vocal organs of singing.

(D2) Opening the throat means stabilizing the larynx in the correct position the lower jaw needs to be relaxed and the cheekbones need to be positively open when singing.

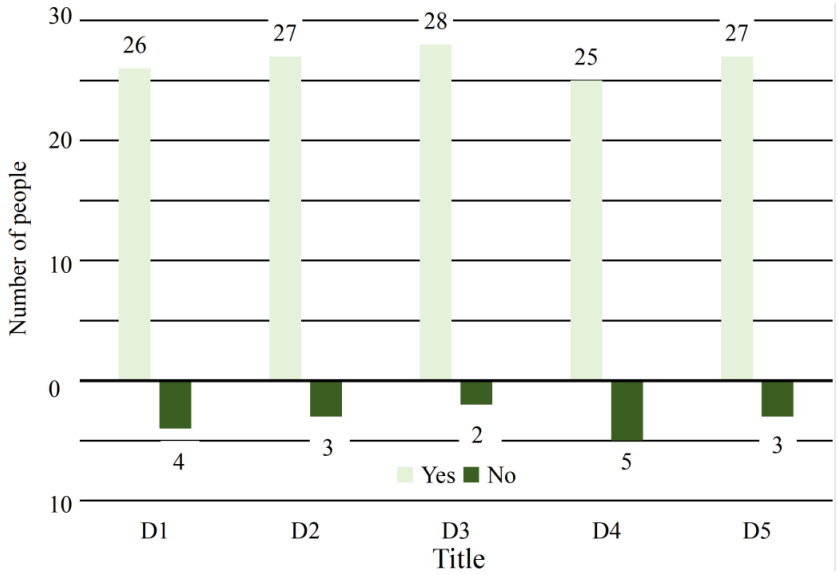
(D3) Singing comes from breathing.

(D4) Diaphragm generally refers to the diaphragm.

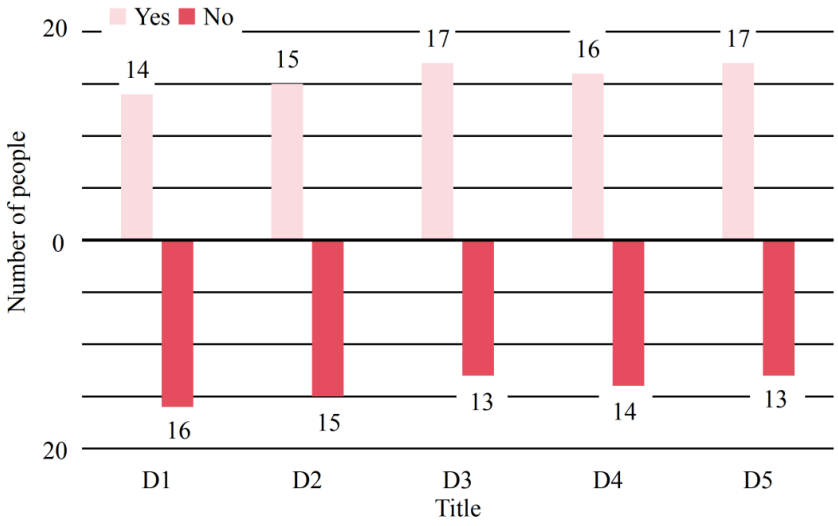
(D5) The diaphragm is generally found in the human body below the heart and both lungs, and at the upper end of the abdominal organs such as the liver, spleen, and stomach.

Comparing the responses of students in the experimental class and the control class, see Fig. 7(a)-(b), the responses of students in the experimental class to the five questions were very satisfactory, with 25 or more students answering the questions correctly, which is more than 83.33% of the total number of students in the class, and only a few students had a weaker mastery of the relevant knowledge. On the other hand, the correct and incorrect rates of the

students in the control class were more consistent, with the number of correct and incorrect answers for each question within the range of (40.00,60.00)%, indicating that their mastery of theoretical knowledge was weak.



(a) Experimental group



(b) Control group

Figure 7: The discrimination of singing vocalization

3.3.3 Confidence and enjoyment of singing

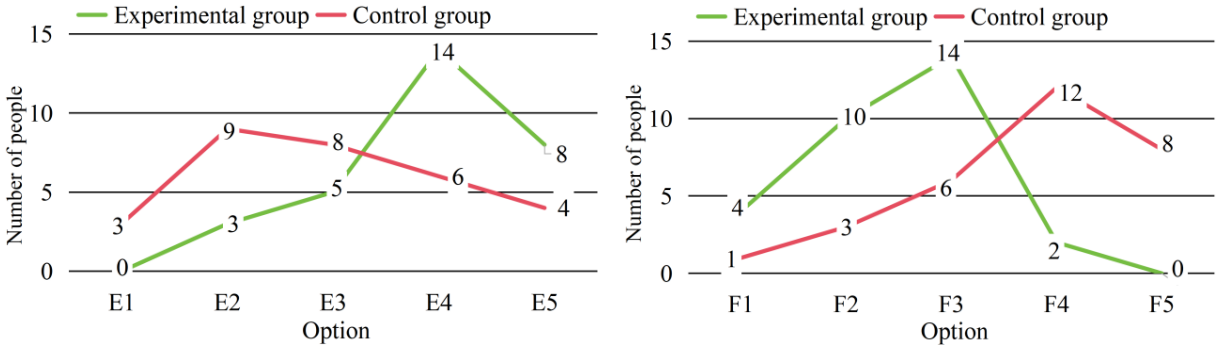
In the module on Confidence and Enjoyment of Singing, three questions and options were set as follows:

(E) Does understanding the theory of singing promote your enjoyment of singing? (E1) No, (E2) A little, (E3) Normal, (E4) More, (E5) A lot

(F) Do you ever have difficulty in singing and give up? (F1) No, (F2) Not very much, (F3) Probably, (F4) Very likely, (F5) Definitely

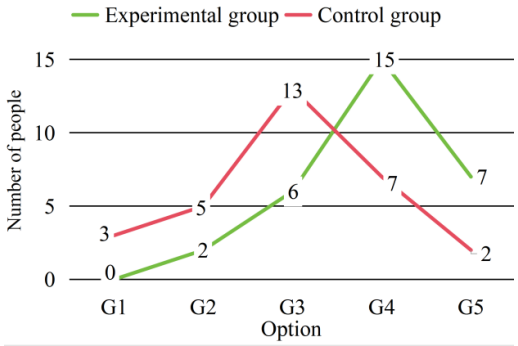
(G) Does learning basic theoretical knowledge systematically help you improve your self-confidence? (G1) No, (G2) A little, (G3) Normal, (G4) More so, (G5) Very much so

Plotting the confidence and liking of singing of the students in the experimental and control classes is shown in Fig. 8(a)-(c), in terms of confidence and liking of singing, 22 (73.33%) students in the experimental class have increased their liking of singing, nearly half of the students in the experimental class will not give up because of encountering difficulties, and 22 (73.33%) students in the experimental class gained self-confidence due to the systematic study of the basic theoretical knowledge improved. On the other hand, the performance of the students in the control class was more moderate, with more concentration on the middle option, whether it was the degree of liking, the idea of giving up or self-confidence.



(a) A

(b) B



(c) C

Figure 8: The confidence and hobbies in singing

Overall, the scientific training content module division, targeted selection of teaching materials and professional training methods can achieve more intuitive teaching results than traditional training programs. In addition to significantly improving the learners' basic singing performance and skills (e.g., pitch, rhythm, treble and bass, etc.), it also has a deep and positive impact on the learners' artistic expression at the level of theoretical knowledge and emotional perception.

4 Conclusion

Under the professional vocal training program, 97.00% of the students in the experimental class improved their pitch performance to varying degrees, and all students showed improved mastery of musical rhythm and treble skills, 95.34% of the students showed varying degrees of improvement in their treble levels, and 80.00%, 70.00%, and 43.33% of the students were able to skillfully use 3 articulation techniques, namely, vibrato, straight voice, and jitterbug, in

their singing. The students were able to skillfully use three kinds of articulation techniques in their singing, namely, vibrato, straight tone and jittery tone. More than half of the students in the experimental class had a good grasp of the basics such as the use of breath and the position of vocal power, as well as the mastery of theoretical knowledge. In addition, more than 70.00% of the students agreed that their singing confidence, ability to overcome difficulties and interest in singing were improved under this training program.

The vocal training program in this paper can not only effectively improve the singing ability, skill application and theoretical knowledge mastery, but also enhance the singing motivation and interest of the learners through appropriate training forms and learning modes, thus promoting the release of their overall artistic expression. Accordingly, this paper suggests that in the cultivation of artistic expression of vocal majors, their external performance and internal perception should be synthesized to give professional and targeted training.

Funding

This research was supported by the Special Cultural Research Project of Henan Culture Promotion Project in 2023: The Cultural Connotations of the Sacrifice to Emperor Huangdi in Xinzheng from the Perspective of National Ritual and Music Culture (Project Approval Number: 2023XWH261).

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